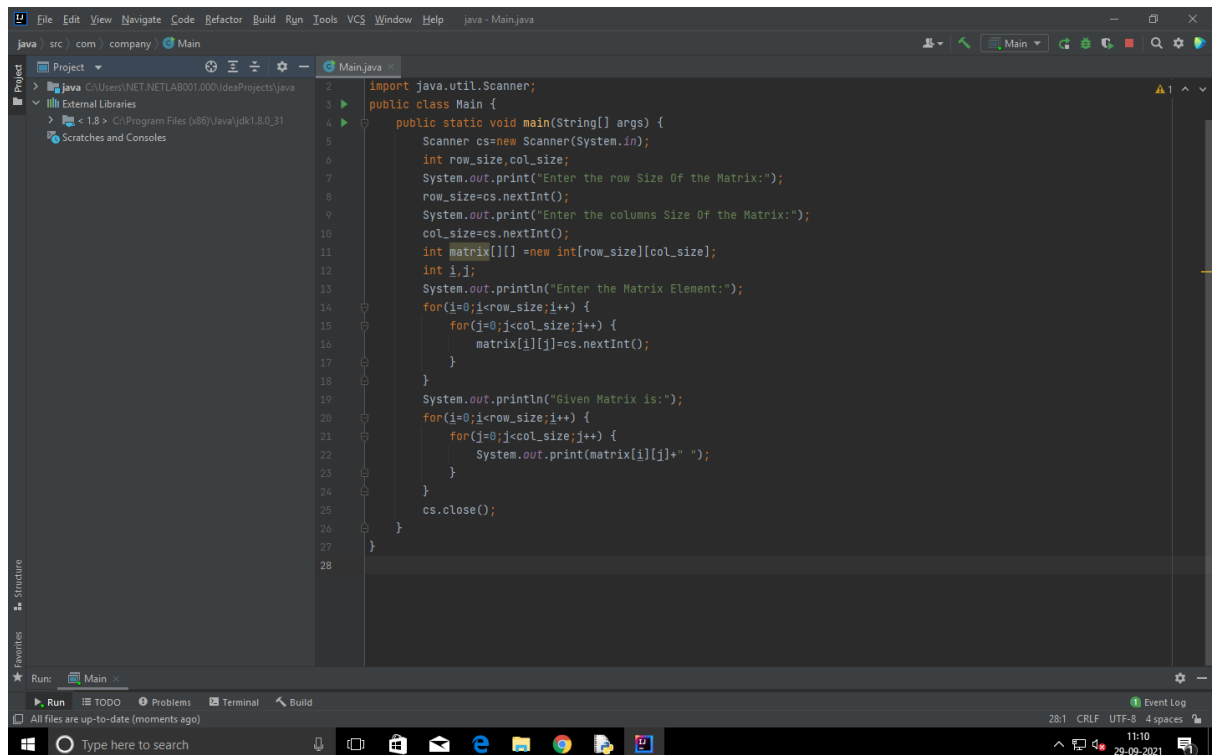


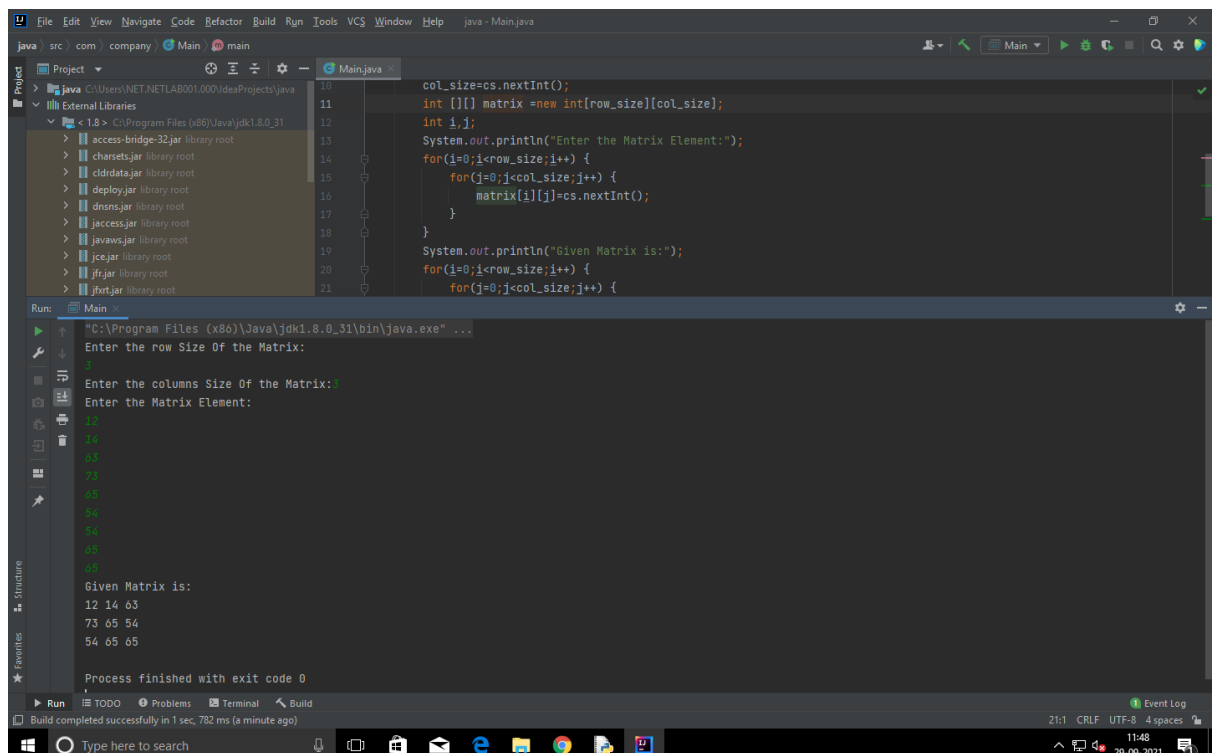
# 1. Write a Program to read and display a Matrix?

Program :



```
1  import java.util.Scanner;
2  public class Main {
3
4      public static void main(String[] args) {
5          Scanner cs=new Scanner(System.in);
6          int row_size,col_size;
7          System.out.print("Enter the row Size Of the Matrix:");
8          row_size=cs.nextInt();
9          System.out.print("Enter the columns Size Of the Matrix:");
10         col_size=cs.nextInt();
11         int matrix[][] =new int[row_size][col_size];
12         int i,j;
13         System.out.println("Enter the Matrix Element:");
14         for(i=0;i<row_size;i++) {
15             for(j=0;j<col_size;j++) {
16                 matrix[i][j]=cs.nextInt();
17             }
18         }
19         System.out.println("Given Matrix is:");
20         for(i=0;i<row_size;i++) {
21             for(j=0;j<col_size;j++) {
22                 System.out.print(matrix[i][j]+" ");
23             }
24         }
25         cs.close();
26     }
27 }
28
```

Output :



```
10         col_size=cs.nextInt();
11         int [][] matrix =new int[row_size][col_size];
12         int i,j;
13         System.out.println("Enter the Matrix Element:");
14         for(i=0;i<row_size;i++) {
15             for(j=0;j<col_size;j++) {
16                 matrix[i][j]=cs.nextInt();
17             }
18         }
19         System.out.println("Given Matrix is:");
20         for(i=0;i<row_size;i++) {
21             for(j=0;j<col_size;j++) {
```

Run: Main

"C:\Program Files (x86)\Java\jdk1.8.0\_31\bin\java.exe" ...

Enter the row Size Of the Matrix:  
3

Enter the columns Size Of the Matrix:  
3

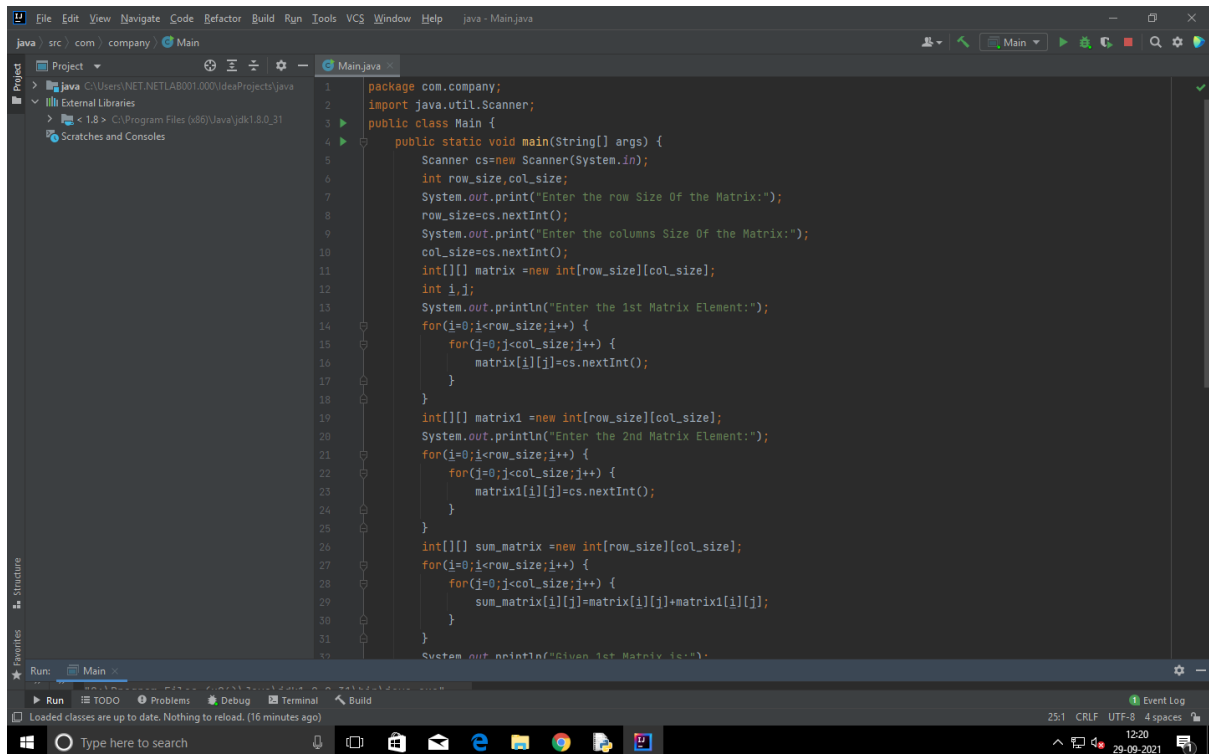
Enter the Matrix Element:  
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63  
73  
65  
54  
54  
65  
65

Given Matrix is:  
12 14 63  
73 65 54  
54 65 65

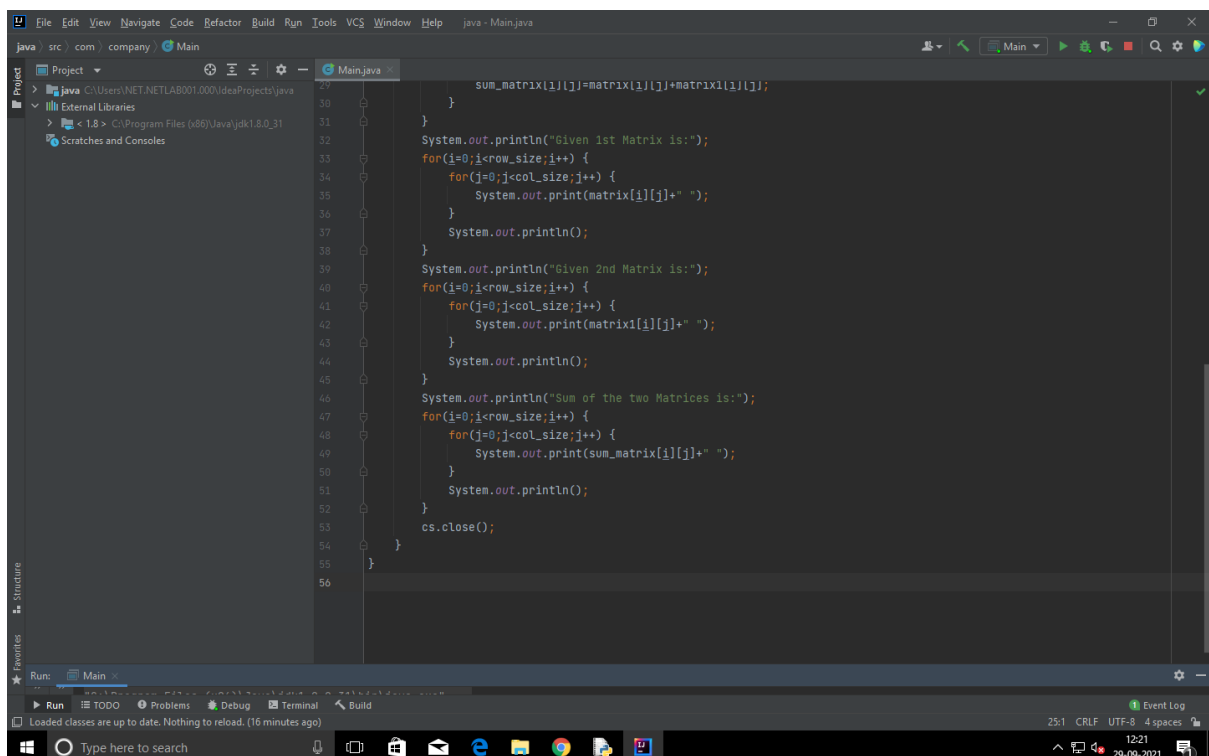
Process finished with exit code 0

2.write a Program to find the addition of two matrices ?

Program :

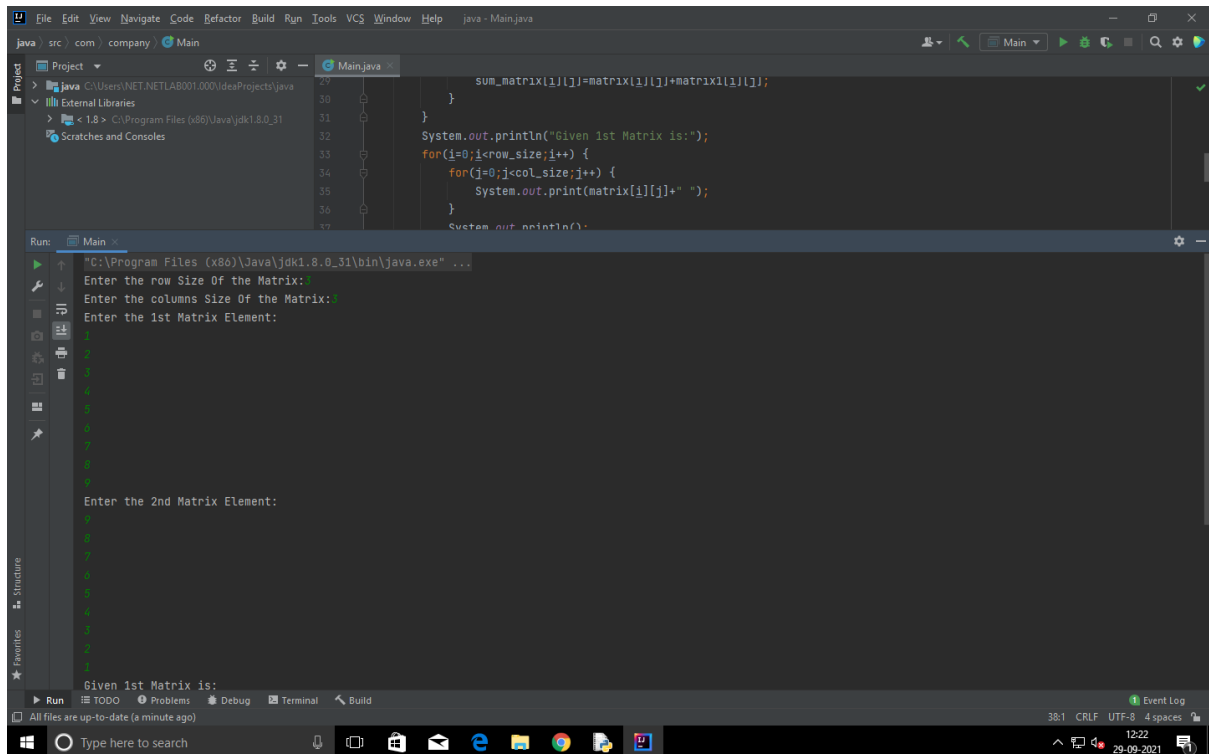


```
1 package com.company;
2 import java.util.Scanner;
3 public class Main {
4     public static void main(String[] args) {
5         Scanner cs=new Scanner(System.in);
6         int row_size,col_size;
7         System.out.print("Enter the row Size Of the Matrix:");
8         row_size=cs.nextInt();
9         System.out.print("Enter the columns Size Of the Matrix:");
10        col_size=cs.nextInt();
11        int[][] matrix =new int[row_size][col_size];
12        int i,j;
13        System.out.println("Enter the 1st Matrix Element:");
14        for(i=0;i<row_size;i++) {
15            for(j=0;j<col_size;j++) {
16                matrix[i][j]=cs.nextInt();
17            }
18        }
19        int[][] matrix1 =new int[row_size][col_size];
20        System.out.println("Enter the 2nd Matrix Element:");
21        for(i=0;i<row_size;i++) {
22            for(j=0;j<col_size;j++) {
23                matrix1[i][j]=cs.nextInt();
24            }
25        }
26        int[][] sum_matrix =new int[row_size][col_size];
27        for(i=0;i<row_size;i++) {
28            for(j=0;j<col_size;j++) {
29                sum_matrix[i][j]=matrix[i][j]+matrix1[i][j];
30            }
31        }
32        System.out.println("Given 1st Matrix is:");
```

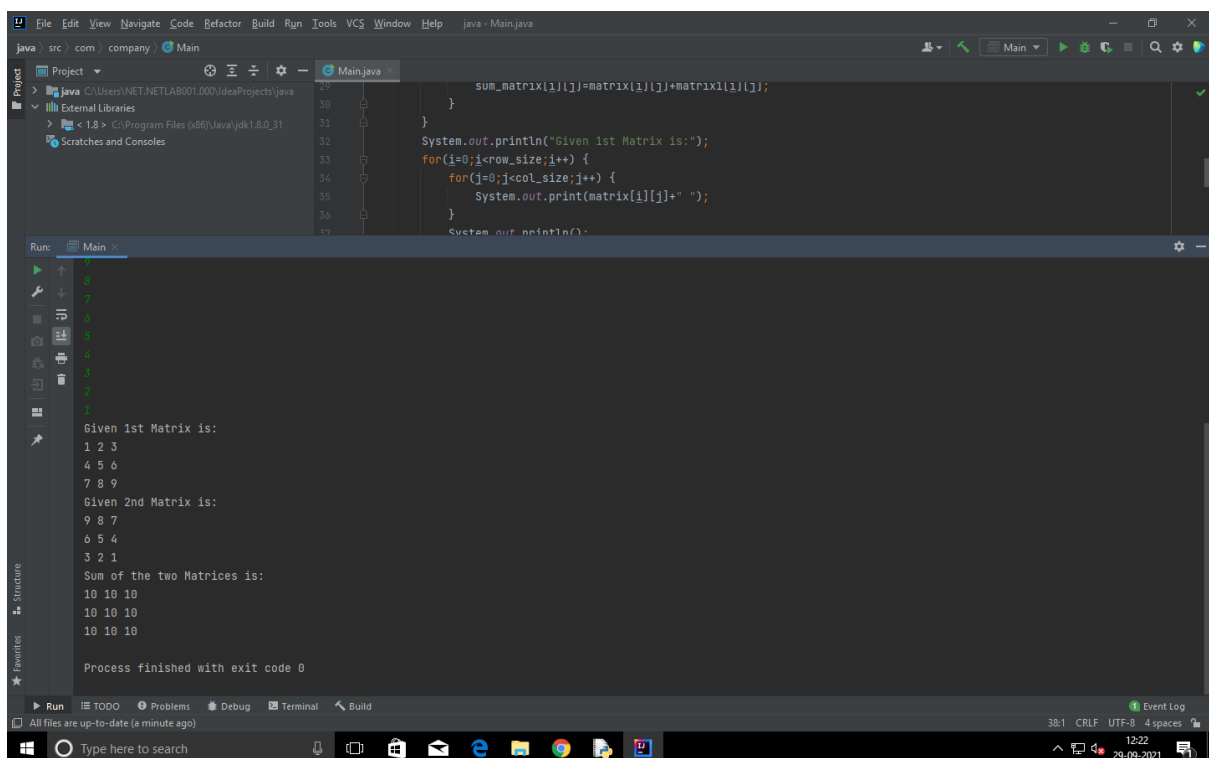


```
29        sum_matrix[i][j]=matrix[i][j]+matrix1[i][j];
30    }
31    }
32    System.out.println("Given 1st Matrix is:");
33    for(i=0;i<row_size;i++) {
34        for(j=0;j<col_size;j++) {
35            System.out.print(matrix[i][j]+" ");
36        }
37        System.out.println();
38    }
39    System.out.println("Given 2nd Matrix is:");
40    for(i=0;i<row_size;i++) {
41        for(j=0;j<col_size;j++) {
42            System.out.print(matrix1[i][j]+" ");
43        }
44        System.out.println();
45    }
46    System.out.println("Sum of the two Matrices is:");
47    for(i=0;i<row_size;i++) {
48        for(j=0;j<col_size;j++) {
49            System.out.print(sum_matrix[i][j]+" ");
50        }
51        System.out.println();
52    }
53    cs.close();
54 }
55 }
56 }
```

Output :



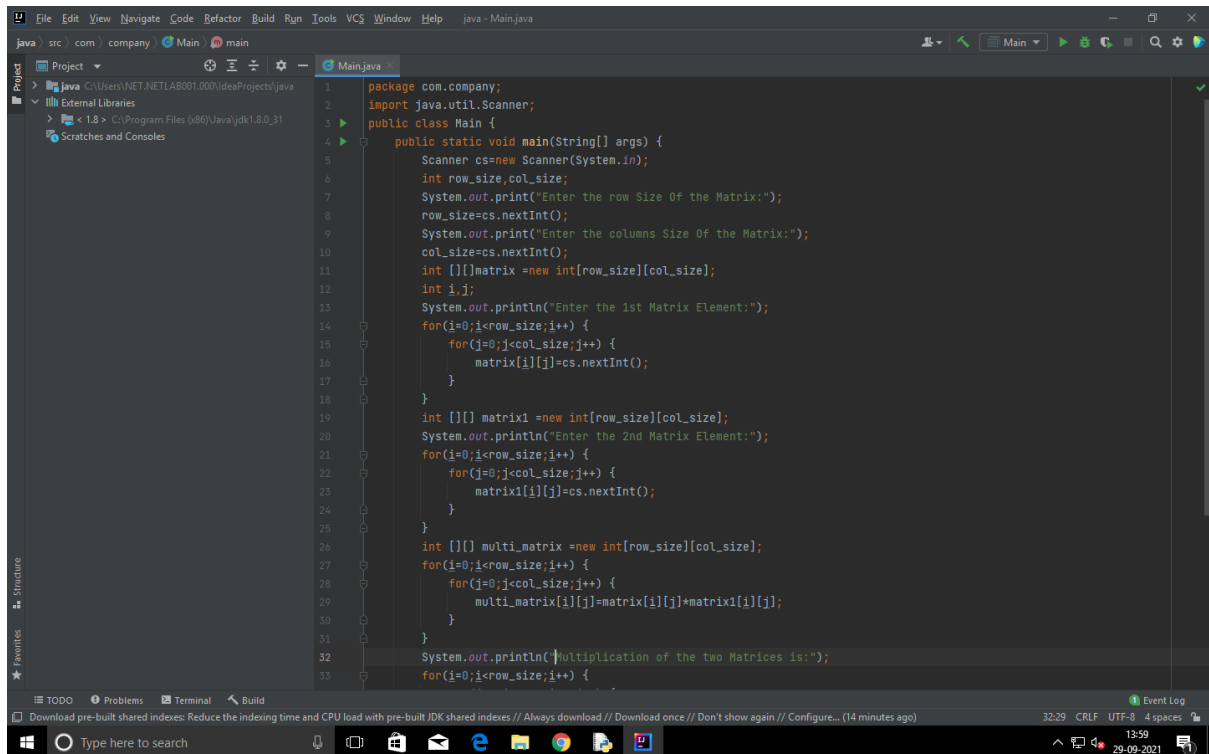
```
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help java - Main.java
java src com company Main
Project
  java C:\Users\NET\LAB001\000\IdeaProjects\java
  External Libraries
  < 1.8 > C:\Program Files (x86)\Java\jdk1.8.0_31
  Scratches and Consoles
Main.java
29      sum_matrix[i][j]=matrix1[i][j]+matrix1[i][j];
30    }
31  }
32  System.out.println("Given 1st Matrix is:");
33  for(i=0;i<row_size;i++) {
34      for(j=0;j<col_size;j++) {
35          System.out.print(matrix1[i][j]+" ");
36      }
37  }
38  System.out.println();
Run: Main
  "C:\Program Files (x86)\Java\jdk1.8.0_31\bin\java.exe" ...
  Enter the row Size Of the Matrix:
  Enter the columns Size Of the Matrix:
  Enter the 1st Matrix Element:
  Enter the 2nd Matrix Element:
  Given 1st Matrix is:
  Run TODO Problems Debug Terminal Build
  All files are up-to-date (a minute ago)
  38:1 CRLF UTF-8 4 spaces
  12:22 29-09-2021
```



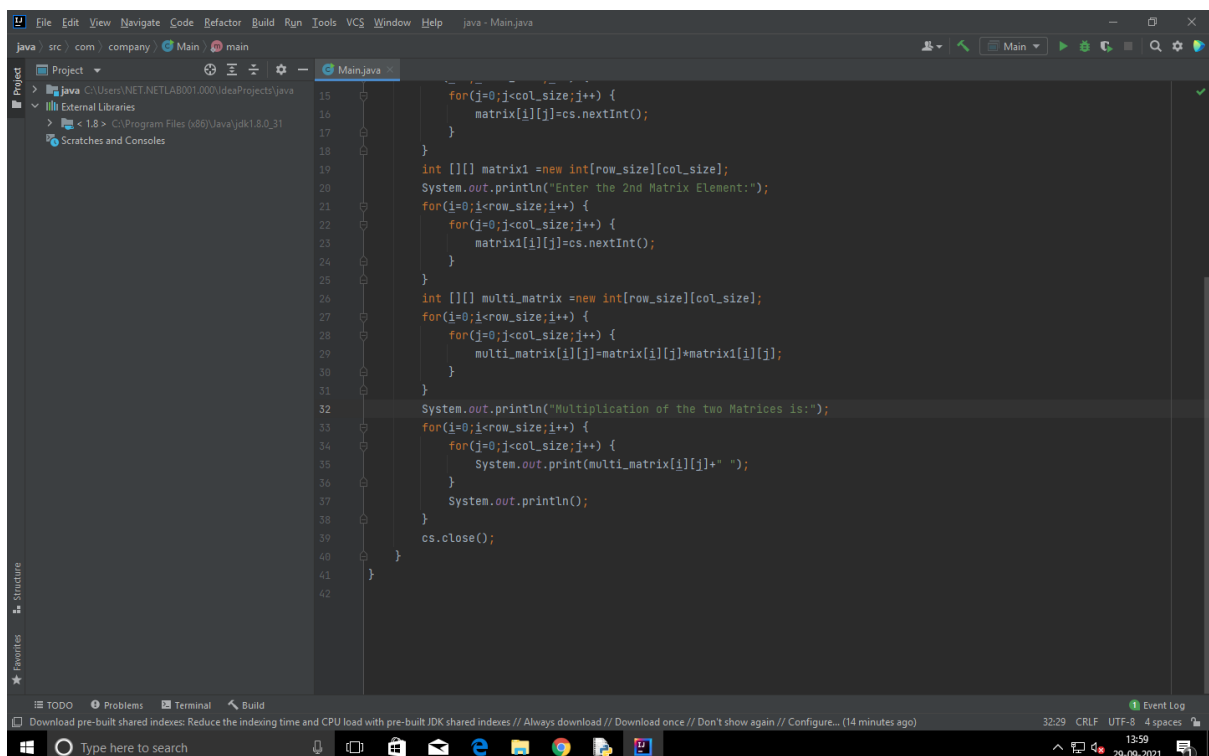
```
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help java - Main.java
java src com company Main
Project
  java C:\Users\NET\LAB001\000\IdeaProjects\java
  External Libraries
  < 1.8 > C:\Program Files (x86)\Java\jdk1.8.0_31
  Scratches and Consoles
Main.java
29      sum_matrix[i][j]=matrix1[i][j]+matrix1[i][j];
30    }
31  }
32  System.out.println("Given 1st Matrix is:");
33  for(i=0;i<row_size;i++) {
34      for(j=0;j<col_size;j++) {
35          System.out.print(matrix1[i][j]+" ");
36      }
37  }
38  System.out.println();
Run: Main
  Given 1st Matrix is:
  1 2 3
  4 5 6
  7 8 9
  Given 2nd Matrix is:
  9 8 7
  6 5 4
  3 2 1
  Sum of the two Matrices is:
  10 10 10
  10 10 10
  10 10 10
  Process finished with exit code 0
  Run TODO Problems Debug Terminal Build
  All files are up-to-date (a minute ago)
  38:1 CRLF UTF-8 4 spaces
  12:22 29-09-2021
```

3.write a program to find the multiplication of two matrices ?

Program :

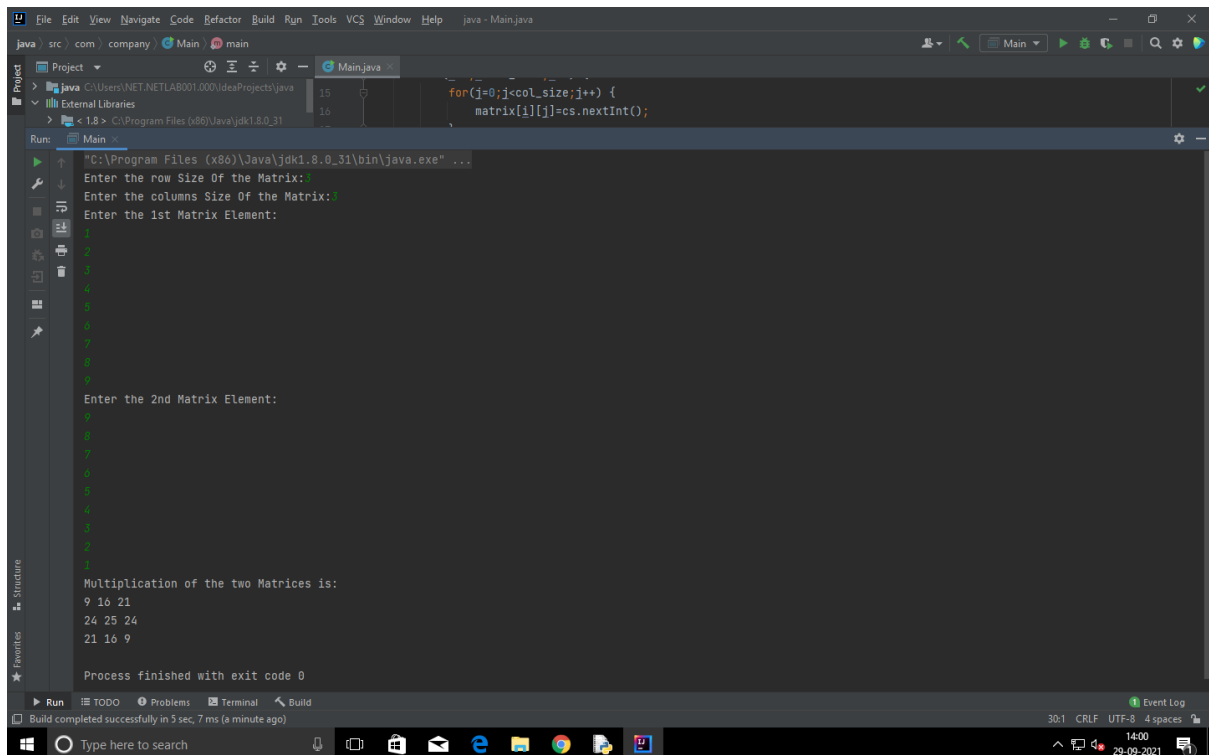


```
1 package com.company;
2 import java.util.Scanner;
3 public class Main {
4     public static void main(String[] args) {
5         Scanner cs=new Scanner(System.in);
6         int row_size,col_size;
7         System.out.print("Enter the row Size Of the Matrix:");
8         row_size=cs.nextInt();
9         System.out.print("Enter the columns Size Of the Matrix:");
10        col_size=cs.nextInt();
11        int [][]matrix=new int[row_size][col_size];
12        int i,j;
13        System.out.println("Enter the 1st Matrix Element:");
14        for(i=0;i<row_size;i++) {
15            for(j=0;j<col_size;j++) {
16                matrix[i][j]=cs.nextInt();
17            }
18        }
19        int [][] matrix1 =new int[row_size][col_size];
20        System.out.println("Enter the 2nd Matrix Element:");
21        for(i=0;i<row_size;i++) {
22            for(j=0;j<col_size;j++) {
23                matrix1[i][j]=cs.nextInt();
24            }
25        }
26        int [][] multi_matrix =new int[row_size][col_size];
27        for(i=0;i<row_size;i++) {
28            for(j=0;j<col_size;j++) {
29                multi_matrix[i][j]=matrix[i][j]*matrix1[i][j];
30            }
31        }
32        System.out.println("Multiplication of the two Matrices is:");
33        for(i=0;i<row_size;i++) {
```



```
34            for(j=0;j<col_size;j++) {
35                System.out.print(multi_matrix[i][j]+" ");
36            }
37            System.out.println();
38        }
39        cs.close();
40    }
41 }
42 }
```

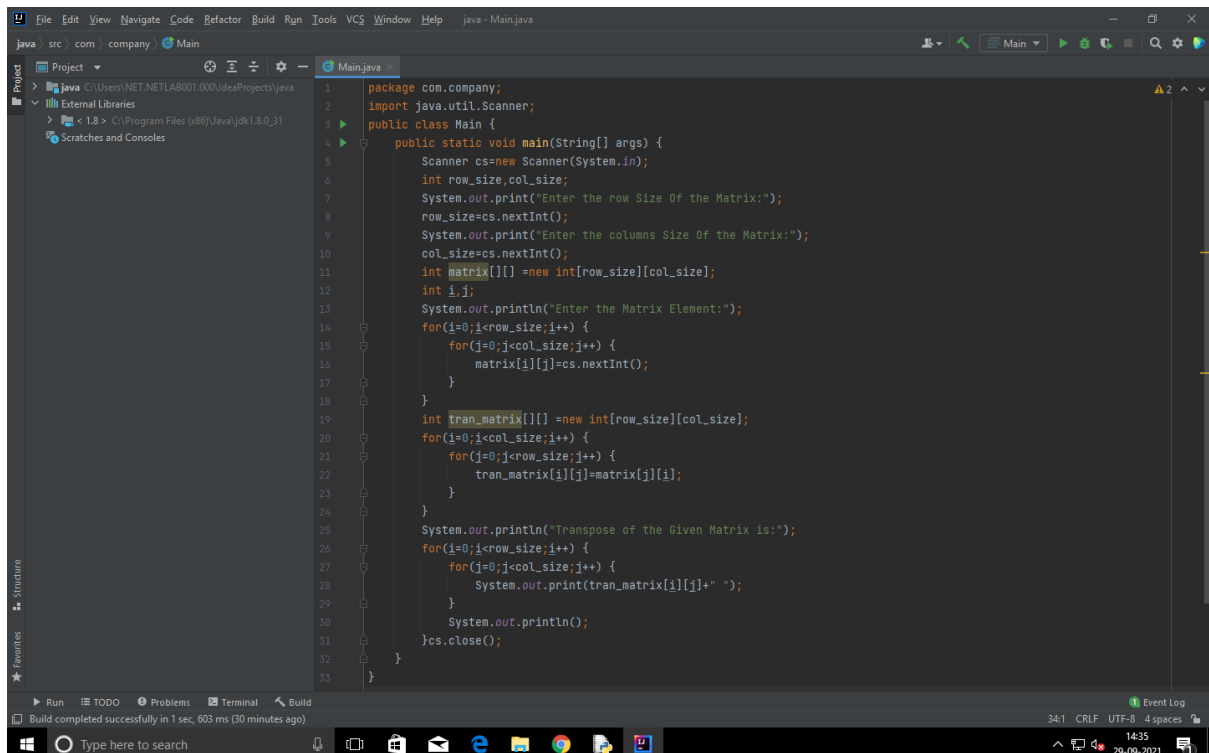
Output :



```
java - Main.java
Project
  java C:\Users\NET.NETLAB001.000\IdeaProjects\java
  External Libraries
  < 1.8 > C:\Program Files (x86)\Java\jdk1.8.0_31
Run
  "C:\Program Files (x86)\Java\jdk1.8.0_31\bin\java.exe" ...
  Enter the row Size Of the Matrix:
  Enter the columns Size Of the Matrix:
  Enter the 1st Matrix Element:
  Enter the 2nd Matrix Element:
  Multiplication of the two Matrices is:
  9 16 21
  24 25 24
  21 16 9
  Process finished with exit code 0
Run
  Build completed successfully in 5 sec, 7 ms (a minute ago)
```

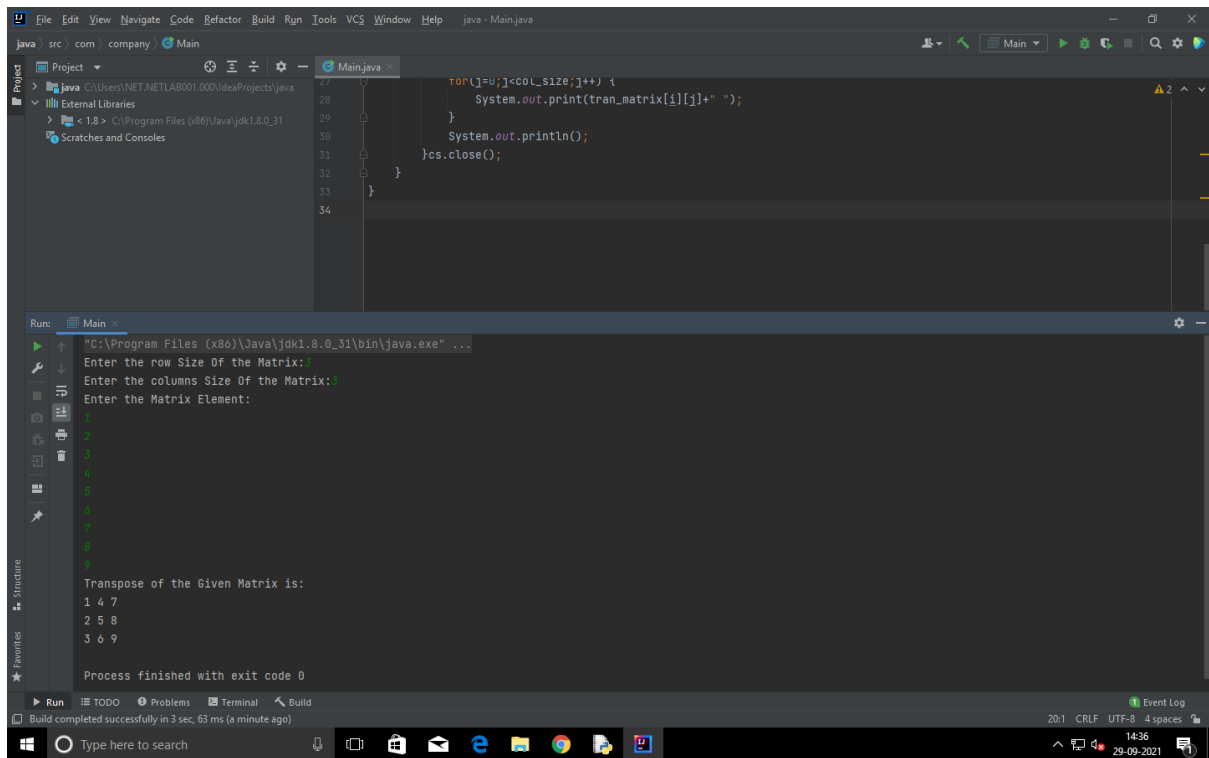
4. Write a program to find the transpose of a matrix ?

Program :



```
java - Main.java
Project
  java C:\Users\NET.NETLAB001.000\IdeaProjects\java
  External Libraries
  < 1.8 > C:\Program Files (x86)\Java\jdk1.8.0_31
  Scratches and Consoles
Main.java
1 package com.company;
2 import java.util.Scanner;
3 public class Main {
4     public static void main(String[] args) {
5         Scanner cs=new Scanner(System.in);
6         int row_size,col_size;
7         System.out.print("Enter the row Size Of the Matrix:");
8         row_size=cs.nextInt();
9         System.out.print("Enter the columns Size Of the Matrix:");
10        col_size=cs.nextInt();
11        int matrix[][] =new int[row_size][col_size];
12        int i,j;
13        System.out.println("Enter the Matrix Element:");
14        for(i=0;i<row_size;i++) {
15            for(j=0;j<col_size;j++) {
16                matrix[i][j]=cs.nextInt();
17            }
18        }
19        int tran_matrix[][] =new int[row_size][col_size];
20        for(i=0;i<col_size;i++) {
21            for(j=0;j<row_size;j++) {
22                tran_matrix[i][j]=matrix[j][i];
23            }
24        }
25        System.out.println("Transpose of the Given Matrix is:");
26        for(i=0;i<row_size;i++) {
27            for(j=0;j<col_size;j++) {
28                System.out.print(tran_matrix[i][j]+" ");
29            }
30            System.out.println();
31        }
32        cs.close();
33    }
34 }
```

Output :



The screenshot displays an IDE window with a Java project named 'Main'. The code in 'Main.java' calculates the transpose of a 3x3 matrix. The Run console shows the program's execution, including prompts for matrix dimensions and elements, and the resulting transposed matrix.

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```

```
Run: Main
C:\Program Files (x86)\Java\jdk1.8.0_31\bin\java.exe ...
Enter the row Size Of the Matrix: 3
Enter the columns Size Of the Matrix: 3
Enter the Matrix Element:
1 4 7
2 5 8
3 6 9

Transpose of the Given Matrix is:
1 4 7
2 5 8
3 6 9

Process finished with exit code 0
```

